REMARKS/ARGUMENTS

The office action of May 31, 2006, has been carefully reviewed and these remarks are responsive thereto. Claims 1-15, 23-25, 33-34, and 38-40 are canceled. Claims 16, 19-22, and 29-32 have been amended. Claims 41-48 have been added. Reconsideration and allowance of the instant application are respectfully requested. Claims 16-22, 26-32, 35-37, and 41-48 remain pending.

New independent claims 41, 43, 45, and 47 include many of the features of now canceled independent claims 15, 23, 24, and 40. Dependent claims of claims 15, 23, 24, and 40 have been amended as necessary to reflect the new dependency.

Claims 15-32 and 35-40 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Teder et al. (U.S. Pat. No. 5,544,156, hereinafter referred to as *Teder*) in view of Popovic (U.S. Pat. No. 6,292,519, hereinafter referred to as *Popovic*). Applicant respectfully traverses.

Teder relates generally to radio communication methods and systems and to the processing of code division multiple access (CDMA) signals (Col. 1, ll. 6 to 9). Specifically, *Teder* relates to the provision of coherent detection in an uplink between a mobile station and a base station "using information already provided in multirate CDMA systems for an independent purpose as a reference" (Col. 2, ll. 39 to 42). In *Teder*, "information relating to the data rate at which information in a data field of each frame is transmitted can be provided in a control channel, which is transmitted in parallel with the data channel, and demodulated prior to demodulation of the data field to provide phase and amplitude information for coherent detection" (Col. 2, ll. 43 to 48).

According to column 4, lines 29 to 32 of *Teder*, "a PCCH frame contains relevant information about the structure of the concurrently transmitted PDCH and, therefore, the PCCH information is to be decoded before the PDCH can be demodulated." A frame buffer 18 in front of a PDCH RAKE demodulator is used to delay input of the data signal while the corresponding PCCH frame is being decoded (Col. 4, ll. 31 to 33). The PCCH provides information "which indicates for each frame the data rate at which the data field has been transmitted" (Col. 4, ll. 12 to 15). The chip rate is equal to the data rate multiplied by the spreading factor. By indicating

the data rate in the PCCH, information regarding the spreading factor of the data field is provided, because the chip rate remains constant (see Col. 3, l. 67 to col. 4, l. 2).

Teder states that "[a]fter differentially coherent demodulation of the PCCH and soft decision decoding, the PCCH can be viewed as an effective pilot channel. Decoding errors on the PCCH unavoidably lead to a lost PDCH frame, because the information transmitted on the PCCH, e.g. the correct spreading factor, is required for PDCH demodulation" (Col. 5, ll. 33 to 38). In summary, under the *Teder* system, each PDCH frame has a corresponding PCCH frame which contains information about the PDCH frame. *Teder* clearly teaches that the corresponding PCCH frame is decoded before the PDCH frame to allow the PDCH frame to be decoded.

Popovic relates to the correction of signal to interference measurements in CDMA cellular radio telephone systems. At column 1, lines 49 to 59, *Popovic* states:

> "CDMA systems tolerate interference -- but only up to a certain threshold limit. The introduction of additional active mobile radio transmissions to the CDMA system increases the overall level of interference at the cell site receivers (base stations) receiving CDMA signals from the mobile radio transmitters. The particular level of interference introduced by each mobile's transmission depends on its received power level at the cell site, its timing synchronization relative to other sites at the cell site, and its specific cross-correlation with other transmitted CDMA signals."

Popovic states that "[a]ccordingly, an important task of CDMA base stations is to control mobile transmit power of each mobile user, and they typically do so using a fast Transmit Power Control (TPC) algorithm" (Col. 2, ll. 11 to 21). The object of *Popovic* is therefore "to perform accurate and effective mobile transmit power control in a CDMA communications system" (Col. 2, ll. 30 to 32).

The CDMA cellular radio telephone system 10 described in *Popovic* includes base stations 16a, 16b and mobile stations 18a, 18b, 18c. Base station 16 includes a baseband signal processor 20 and a control processor 36. Baseband processor 20 "includes (Eb) and interference (Io) detector 28 which measures currently received signal and interference values" from decoded signals, and "then provides measured SIR [Signal to Interference Ratio] values... to the control processor 36" (Column 6, ll. 62 to 66).

Popovic indicates that "a problem with measured SIR values in CDMA systems is that they saturate and deviate in a non-linear fashion from the actual SIR values above a certain

signal level. In order to compensate for the non-linearities of the measured SIR values, the control processor 36 applies a correction function to the measured SIR values received from the baseband signal processor 20" (Col. 7, ll. 15 to 21). *Popovic* then gives examples of the co-efficients/parameters for the correction function for spreading factor values of 128 and 16, and states that the determination of those co-efficients/parameters "need only be performed once assuming that the spreading factor remains the same" (Col. 9, ll. 35 to 36). The co-efficients/parameters for the correction function are dependent on the spreading factor (see col. 9, ll. 25 to 35).

Applicant's independent claim 41 recites, among other features, "making an estimate of the spreading factor used to transmit the data unit, using the calculated received power of the decoded initial portion of the control unit and the calculated received power of the decoded initial portion of the data unit." Such a feature is not taught or suggested in either of *Teder* or *Popovic*. In fact, neither *Teder* nor *Popovic* is concerned with the estimation of a spreading factor.

On pages 3 and 4 of the Office Action, referring to *Popovic*, the Action states:

> [t]he SIR values are corrected by changing the measured spreading factor to a new spreading factor (column 8, lines 39 – 47). Figure 7A shows the measured SIR without correction for a spreading factor of 128. Figure 7B shows the measured SIR values with correction. The correction is shown in the table of column 9 where the spreading factor is changed from 128 to 16. It is advantageous to allow the spreading factor to be changed according to the received power measurements to increase the signal-to-interface ratio so data can be received with fewer errors. For this reason, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the communication system of Popovic into the system and method of using the system of Teder.

As described in *Popovic*, Figs 7A and 7B illustrate curves for measured and corrected SIR values respectively when the spreading factor is 128. Figs 8A and 8B illustrate curves for measured and corrected SIR values respectively when the spreading factor is 16. *Popovic* provides two different sets of curves, one with a spreading factor of 128 and one with a spreading factor of 16, merely to illustrate how the parameters of the correction function change with a change in the spreading factor. Each parameter value is determined such that it minimizes the maximum absolute error between the ideal and corrected SIR curves. For example, column 9,

lines 39 to 47 of *Popovic* state that "[c]hanging the spreading factor is equivalent to changing the number of samples for coherent averaging within the pilot preamble or each data symbol. Varying the spreading factor changes the shape of the measured SIR curve, and consequently, the parameters of the correction function change as well."

There is no indication in *Popovic* that changing the spreading factor according to received power measurements increases the SIR so that data can be received with fewer errors, as suggested by the Action. Instead, *Popovic* highlights the problem that the SIR curve saturates (see column 3) and is concerned with correcting measured SIR values to control mobile transmit power more effectively ("An object of the present invention is to perform accurate and effective mobile transmit power control in a CDMA communications system," Col. 4, ll. 30 to 32). Furthermore, *Popovic* assumes that the spreading factor in a particular receiver is known. For example, in reference to Fig. 9, column 9, lines 25 to 32 states that "the first step of the SIR correction routine (block 50) is to determine the correction function parameters based upon the spreading factor used in the CDMA receiver (block 52). Based on that spreading factor, specific values for K, D, T and C0 – C2 (for the first example embodiment) or K0, K1, D0, D1, T0, T1, and C0 – C2 (for the second example embodiment) are determined and stored in the memory" (emphasis added). At no point does *Popovic* describe the spreading factor being changed as a result of any corrections. The *Popovic* method may be operated using an alternative spreading factor, but the spreading factor is not changed, once known.

Still further, as the method described in *Popovic* requires that the spreading factor used in the CDMA receiver is known, there would therefore be no motivation, having read *Popovic*, to develop a method which involves making an estimate of the spreading factor used to transmit a data unit, as required by Applicant's new claim 41. As such, for at least the above-identified reasons, the combination of *Teder* and *Popovic* fails to teach or suggest each and every feature of the claim 41 an there is no motivation to combine the two references. Withdrawal of the rejection is respectfully requested.

Applicant's claims 16-22, 26-32, 35-37, and 42, which depend from claim 41, are allowable over the art of record for at least the same reasons as their ultimate base claim and further in view of the novel features recited therein. For example, the Action cites column 4, lines 1-5 of *Teder* as allegedly describing the features of Applicant's claims 20 and 29-32.

(Action, p. 4). However, *Teder* does not disclose making an estimate of a spreading factor, and does not disclose an estimate that "is calculated by matching a relationship between the received powers of the control unit and the data unit with a member of a set of possible power relationships known a priori, wherein each member of the set corresponds to one of the spreading factors" as recited in dependent claims 20 and 29-32.

Further, dependent claim 35 recites, "wherein the estimate of the spreading factor used to transmit the data unit is different from the assumed spreading factor used to decode the initial portion of the data unit," dependent claim 36 recites, "wherein the information for decoding the data unit includes information indicating the data rate of the data unit, and the initial portion of the data unit is decoded at the assumed spreading factor before the information indicating the data rate of the data unit is decoded," and dependent claim 37 recites, "wherein the initial portion of the data unit is decoded at the assumed spreading factor, and, after the estimate of the spreading factor has been made, the remainder of the data unit is decoded at the estimated spreading factor."

In rejecting these dependent claims, the Action alleges that "the combination discloses the initial portion of the signal is decoded according to a spreading factor, the measured SIR value is corrected and the signal is recovered using the corrected known spreading factor." (Action, p. 4). *Popovic*, however, does not describe such features. Column 9, lines 25-28 of *Popovic* state that, "[t]he first step of the SIR correction routine (block 50) is to determine the correction function parameters based on the spreading factor used in the particular CDMA receiver." The spreading factor is therefore already known and the correction function parameters that are used to correct the measured SIR values are based on the known spreading factor. As such, there is no estimation or correction of any spreading factor in *Popovic*. Furthermore, the method disclosed in *Popovic* does not describe how a "signal is recovered using the corrected spreading factor" as suggested by the Action. As described above, under the *Popovic* system, the purpose of correcting the SIR values is to perform power control analysis based on the corrected SIR values to increase or decrease radio transmit power of a mobile station (see block 62, Fig. 9, and col. 9, ll. 53 to 58).

Applicant's independent claims 43, 45, and 47-48 include similar features as described above with respect to Applicant's claim 41. For at least similar reasons as Applicant's claim 41,

Applicant's independent claims 43, 45, and 47-48 are allowable over the art of record. Withdrawal of the rejection is respectfully requested.

CONCLUSION

All rejections having been addressed, Applicant respectfully submits that the instant application is in condition for allowance, and respectfully solicits prompt notification of the same. However, if for any reason the Examiner believes the application is not in condition for allowance or there are any questions, the examiner is requested to contact the undersigned at (202) 824-3155.

Respectfully submitted,
BANNER & WITCOFF, LTD.

Dated this 22nd day of November, 2006 By: /John M. Fleming/
John M. Fleming
Registration No. 56,536

1001 G Street, N.W.
Washington, D.C. 20001-4597
Tel: (202) 824-3000
Fax: (202) 824-3001